

REMARKS

Applicants appreciate the thorough examination of the application that is reflected in the Office Action dated June 9, 2004, and thank the Examiner for withdrawing the rejections set forth in the previous Office Action dated January 30, 2004. To expedite prosecution of this application, and highlight a further distinction over the cited Mallory reference, Applicants amend each of the independent claims to include the limitations of claim 13, and cancels claim 13 without prejudice or disclaimer. Claims 1-12 and 14-27 are pending in the application. Applicants respectfully request reconsideration of this application.

Claim 1

The Office rejects claims 1, 3, 6-8, 13, 19, 20, 22, 26 and 27 under 35 U.S.C. §102(e) as being anticipated by Mallory (U.S. Patent No. 6,335,933).

Applicants respectfully traverse these rejections for at least the following reasons.

In rejecting claim 1, the Office cites col. 2, line 64 through col. 3, line 10 of the Mallory reference, which discusses that:

In a frame-switched network according to one embodiment of the present invention, a sender sends frames to a receiver over a possibly unreliable channel. A sent frame includes a frame identifier selected from a set of reusable frame identifiers. The sender stores the frame in a frame buffer for a buffer period. Upon receipt of the frame, the receiver determines, from the frame identifier, if frames prior to the received frame were lost in transit. If the receiver determines that it missed a prior frame, the receiver sends the sender a negative acknowledgment (nack) for the missed prior frame or frames. If the sender receives a nack, the sender determines the frame identifier(s) of the missed prior frame(s) and resends the missed frame(s) if the missed frame(s) is (are) in the frame buffer. At the end of a buffer period, the sender releases the transmitted frame from the frame buffer. (Emphasis added.)

Claim 1 relates to a method, in a wireless communication system, for selectively combining a plurality of received transmissions from respective signal sources to recover a message comprised of a plurality of frames. Claim 1 requires:

processing each of the plurality of transmissions separately to recover the message; and
if the message cannot be recovered error-free from a single transmission,

determining erased frames in a message recovered from a first transmission,
 determining good frames recovered from remaining ones of the plurality of transmissions,
 forming at least one combined message, wherein each combined message includes a particular combination of good frames substituting for the erased frames, and
checking each combined message to determine whether it is good or erased. (Emphasis added.)

Applicants submit that the Mallory reference does not teach or suggest the concept “combining a plurality of received transmissions from respective signal sources to recover a message comprised of a plurality of frames,” as required by claim 1. Although FIG. 13 of Mallory shows FRAMES 1-7 being transmitted between a sender and a receiver, the FRAMES 1-7 shown in FIG. 13 of the Mallory reference do not constitute separate transmissions from respective signal sources, but are instead different parts of the same transmission of one message from a single source. As noted above, in Mallory, “[i]f the receiver determines that it missed a prior frame, the receiver sends the sender a negative acknowledgment (nack) for the missed prior frame or frames.” Mallory goes on to discuss that “[i]f the sender receives a nack, the sender determines the frame identifier(s) of the missed prior frame(s) and resends the missed frame(s) if the missed frame(s) is (are) in the frame buffer.” In other words, in Mallory, a second transmission, from the same source, is not triggered unless the sender determines that a prior frame was missed. The Mallory reference therefore does not teach or suggest the concept “combining a plurality of received transmissions from respective signal sources to recover a message comprised of a plurality of frames,” as required by claim 1.

As noted above, the Mallory reference does not suggest the concept of using a plurality of transmissions from respective signal sources, much less teach or suggest the concept “determining good frames recovered from remaining ones of the plurality of transmissions,” as required by claim 1. The Office asserts that FRAME 1, FRAME 2, FRAME 5 and FRAME 6 of FIG. 13 of the Mallory reference correspond to good frames. However, Applicants submit that this teaching of Mallory does not suggest that FRAMES 1, 2, 5 and 6 of the Mallory reference are “recovered from remaining ones of the plurality of transmissions,” as required by claim 1. Thus, the Mallory reference does not teach or suggest this limitation required by claim 1.

As noted above, claim 1 requires that “erased frames” are recovered from a first transmission, whereas “good frames” are recovered from remaining ones of the plurality of transmissions. Mallory and the other cited references do not teach this concept. As such, it is axiomatic that the Mallory reference does not teach or suggest the concept “forming at least one combined message, wherein each combined message includes a particular combination of good frames substituting for the erased frames,” as required by claim 1. Nothing in FIG. 13 of Mallory can be construed to suggest the concept of forming a combined message that comprises a “combination of good frames substituting for the erased frames,” as required by claim 1.

Finally, Applicants submits that the Mallory reference does not teach or suggest the concept “checking each combined message to determine whether it is good or erased,” as required by claim 1. As noted above, the Mallory reference does not suggest the concept of a combined message, much less the concept of “checking each combined message to determine whether it is good or erased,” as required by claim 1.

Applicants submit that the Keskitalo and Alanara references are similarly deficient.

For at least the foregoing reasons, Applicants submit that claim 1 is patentable over the cited references. In addition, Applicants respectfully submit that dependent claims 2-12 and 14-17 are separately patentable at least by virtue of their dependency from independent claim 1, and also because those claims recite additional features that are not taught or suggested by the cited references. For example, claim 3 depends from claim 1 and further requires “checking each frame in the message recovered from the first transmission,” and “marking each frame failing the checking as an erased frame.” As such claim 3 requires that each frame is checked to determine erased frames, and that each combined message is then also checked to determine if it is good or erased. Claim 6 depends from claim 1 and further requires that a single combined message is formed by “identifying each erased frame in the message recovered from the first transmission,” “identifying a good frame, from one of the plurality of transmissions, corresponding to each erased frame,” and “substituting each erased frame with the corresponding good frame to form the combined message.” Applicants submit that the cited references fail to teach or suggest these features.

Applicants further submit that independent claims 18, 19 and 25-27 are patentable over the cited references for at least the same reasons as claim 1, and also because independent claims

18, 19 and 25-27 recite additional features that are not taught or suggested by the cited references. In addition, Applicants respectfully submit that dependent claims 20-24 are separately patentable at least by virtue of their dependency from independent claim 19, and also because those claims recite additional features that are not taught or suggested by the cited references.

Claims 2, 9-12, 14-17, 21, 24, and 25

The Office rejects claims 2, 9-12, 14-17, 21, 24, and 25 under 35 U.S.C. §103(a) as being unpatentable over Mallory in view of Keskitalo (U.S. Patent No. 5,920,553).

Applicants respectfully traverse these rejections for the reasons stated above and for at least the following additional reasons.

In rejecting claim 2, 9-12, 14-17, 21, 24, and 25, the Office cites col. 4, line 41 through col. 5, line 2 of the Keskitalo reference, which discusses that:

The base stations can receive signalling frames from the signalling controller and speech frames from the TRAU at slightly different times even if they were transmitted simultaneously. Each base station multiplexes the signalling information and the user data by replacing a frame containing user data (for instance speech) by a signalling frame. Since the base stations operate independently, they may place a frame containing the same signalling information in places differing slightly from each other in the frame structure of the radio path.

The mobile station receives signals from several base stations and combines them in a preferable manner. Macrodiversity reception can be implemented, for instance by using the rake receiver structure. FIG. 3a shows a block diagram of the structure of the transmitter side of the mobile station of the invention. The receiver comprises an antenna 30, radio frequency parts 31, several rake receiver branches 32a-32c, means 33a-33c for indicating the frame identifier, and means 34 for combining and selecting signals. Each rake receiver branch 32a-32c can be synchronized with a signal propagated along an individual path, this signal being transmitted by one or more base stations. (Emphasis added.)

Claim 2 depends from claim 1 and further requires that “the first transmission is one having a highest signal quality among the plurality of transmissions.” Applicants submit that the cited references fail to teach or suggest this feature. For at least the foregoing reasons, Applicants submit that dependent claim 2 is separately patentable.

Claim 9 depends from claim 1 and further requires that “if the message cannot be recovered error-free from a single transmission and a good frame corresponding to a particular erased frame cannot be derived from a single transmission, combining symbols for two or more frames, from two or more transmissions, corresponding to the erased frame, and decoding the combined symbols to derive a good frame for the erased frame.” Applicants submit that the cited references fail to teach or suggest this feature. For at least the foregoing reasons, Applicants submit that dependent claim 9 is separately patentable. Applicants further submit that claim 21 is separately patentable for at least similar reasons.

Claim 10 depends from claim 9 and further requires that “if the message cannot be recovered error-free from a single transmission and a good frame corresponding to a particular erased frame cannot be derived from a single transmission, ranking the plurality of transmissions, and wherein symbols for frames corresponding to the erased frames are combined in a particular order determined based on the ranking of the plurality of transmissions.” Applicants submit that the cited references fail to teach or suggest this feature. For at least the foregoing reasons, Applicants submit that dependent claim 10 is separately patentable.

Claim 11 depends from claim 10 and further requires that “the plurality of transmissions are ranked based on their signal quality.” Applicants submit that the cited references fail to teach or suggest this feature. For at least the foregoing reasons, Applicants submit that dependent claim 11 is separately patentable.

Claim 12 depends from claim 9 and further requires that “if the message cannot be recovered error-free from a single transmission and a good frame corresponding to a particular erased frame cannot be derived from a single transmission, weighting symbols for each of the two or more frames corresponding to the erased frame based on a respective weight determined based on the signal quality of the two or more transmissions from which the two or more frames are recovered, and wherein the weighted symbols are combined.” Applicants submit that the cited references fail to teach or suggest this feature. For at least the foregoing reasons, Applicants submit that dependent claim 12 is separately patentable.

Claims 4, 5, 18 and 23

The Office rejects claims 4, 5, 18 and 23 under 35 U.S.C. §103(a) as being unpatentable over Mallory in view of Alanara (U.S. Patent No 6,286,122).

Applicants respectfully traverse these rejections for the reasons stated above and for at least the following additional reasons.

Claim 18 relates to a method in a CDMA communication system for selectively combining a plurality of non-synchronous forward link transmissions from respective signal sources to recover a page message comprised of a plurality of frames. Claim 18 requires:

processing each of the plurality of transmissions separately to recover the page message; and

if the page message cannot be recovered error-free from a single transmission,

determining erased frames in a message recovered from a first transmission, based on a set of cyclic redundancy check (CRC) bits included with each frame,

determining a good frame, recovered from one of the plurality of transmissions, for each erased frame,

forming a combined message by substituting each erased frame with a corresponding good frame, and

checking the combined message based on a set of CRC bits included with the message to determine whether it is good or erased.

Applicants submit that claim 18 is patentable over the cited references for at least the reasons discussed above with respect to claim 1. In addition, Applicants further submit that the cited references fail to teach or suggest at least the above-underlined features of claim 18. For at least the foregoing reasons, Applicants submit that dependent claims 4 and 5 are also separately patentable.

Claim 4 depends from claim 3 and further requires that “each frame is checked based on a set of cyclic redundancy check (CRC) bits generated for the frame.” Claim 5 depends from claim 1 and further requires that “each combined message is checked based on a set of cyclic redundancy check (CRC) bits generated for the message.” Applicants submit that the cited references fail to teach or suggest this feature. For at least the foregoing reasons, Applicants submit that dependent claims 4 and 5 are separately patentable.



PATENT

Applicants submit that claim 23, which depends from independent claim 19, is separately patentable for at least the similar reasons.

RECEIVED

JUN 25 2004

Technology Center 2600

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicants submit that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

Dated: June 18, 2004

By: Erin P. Madill
Erin P. Madill, Reg. No. 46,893
(858) 658-2598

QUALCOMM Incorporated
5775 Morehouse Drive
San Diego, California 92121
Telephone: (858) 658-5787
Facsimile: (858) 658-2502